

REMARKS

By the present amendment, claim 1 has been amended to clarify the invention. Claims 8-14 have been added.

Claims 1-14 are thus pending in this application.

In the Office Action, the Examiner rejected claims 1-7 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 5,060,297 to Ma et al.

Claims 1, 3 and 6 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 6,112,070 to Katsuyama et al.

Claims 1, 4, 5 and 7 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 5,010,400 to Oto.

In view of the arguments that follow, Applicants respectfully traverse the Examiner's rejection of claims 1-7.

Rejection Under 35 U.S.C. §102(b)

The Examiner rejected claims 1-7 under 35 U.S.C. §102(b) as being anticipated by Ma et al. The rejection is respectfully traversed.

Applicants' amended claim 1 recites a frequency conversion apparatus comprising: a high-frequency amplifier for amplifying an input high-frequency signal; a mixer for mixing the amplified high frequency signal applied through a variable filter, with a local oscillation signal; a filter for restricting a band of an output signal of the mixer to permit passage of only components within a predetermined band; and said variable filter provided between the high-frequency amplifier and the mixer, having a cut-off frequency that is controllable, wherein the high frequency amplifier shuts off

reflected waves outside a pass band of the variable filter, and wherein the cut-off frequency of the variable filter is so controlled as to vary with a reception channel signal.

The Examiner alleged that Ma et al. disclose the recitations of claim 1. Specifically, the Examiner alleged that Ma et al. disclose a high frequency amplifier for amplifying an input high-frequency signal, by referencing RF preamplifier 26 and col. 4, line 44; and a mixer for mixing an output signal of the high-frequency amplifier with a local oscillation signal, by referencing reference numeral 36, col. 4, lines 53-56.

Applicants respectfully submit that Ma et al. do not disclose or teach “a high-frequency amplifier for amplifying an input high-frequency signal” and “a mixer for mixing the amplified high frequency signal applied through a variable filter with a local oscillation signal,” as recited in claim 1.

Ma et al. disclose a tuner used in a TVRO earth station that includes intermediate frequency signals passed through a radio frequency preamplifier to an image frequency rejection tracking filter (28), which rejects image frequencies. The signals passed by the tracking filter are fed through an automatic gain control amplifier (30). A mixer combines the intermediate frequency outputted from the automatic gain control amplifier and the output of a voltage-controlled oscillator, and converts the intermediate frequency to a second intermediate frequency.

The combination of the **intermediate frequency signal outputted from an automatic gain control amplifier** and the output of the voltage controlled oscillator with a mixer of Ma et al. is not analogous to the combination of **an amplified high frequency signal outputted from a variable filter** and a local oscillation signal. The signal combined with the local oscillation signal in the present invention is a **high frequency signal** and not

an **intermediate frequency** signal, as disclosed in Ma et al. Moreover, the mixer in Ma et al. combines the **intermediate frequency** outputted from the **automatic gain control amplifier** with the output of the voltage-controlled oscillator, which converts the **intermediate frequency** to a **second intermediate frequency**. The intermediate frequency converted to a second intermediate frequency of Ma et al. is not analogous to an **amplified high frequency signal** mixed with a local oscillation signal and converted to an **intermediate frequency** in the present invention. Therefore, the intermediate frequency of Ma et al., that is amplified by an **automatic gain control amplifier**, after passing through the tracking filter, is not analogous to the high frequency signal that is amplified by a radio frequency amplifier and passed through a variable filter in the present invention.

In view of the reasons given above, Applicants respectfully submit that Ma et al. do not disclose claim 1, and the rejection of claim 1 should be withdrawn. Applicants also respectfully submit that the rejection of dependent claims 2-5 and 7 should be withdrawn for at least the same reasons given above to respective base claim 1.

With respect to claim 6, the Examiner alleged that Ma et al. teach a phase locked loop which controls an oscillator, by referencing the phase locked loop 44 and oscillator 32 in Fig. 2.

Applicants respectfully submit that Ma et al. do not disclose that "the cut-off frequency of the variable filter is controlled by use of a phase-locked loop circuit that controls a frequency of the local oscillation signal," as recited in claim 6.

Ma et al. disclose a feedback loop that includes a phase locked loop along with a first and second frequency divider. The feedback loop ensures the integrity of the output frequency of the voltage control oscillator. However, there is nothing in the present

invention that discloses a first and second frequency divider along with a phase locked loop that controls the frequency of the local oscillator. Therefore, the feedback loop that comprises a phase locked loop, a first frequency divider and a second frequency divider of Ma et al., that controls the integrity of the output frequency of the voltage control oscillator is not analogous to the phase locked loop circuit that controls the cut-off frequency of the variable filter in the present invention.

In view of the reasons given above, Applicants respectfully submit that Ma et al. do not disclose dependent claim 6, and the rejection of dependent claim 6 should be withdrawn.

The Examiner rejected claims 1, 3 and 6 under 35 U.S.C. §102(b) as being anticipated by Katsuyama et al. The rejection is respectfully traversed.

The Examiner alleged that Katsuyama et al. disclose the recitations of claim 1. Specifically, the Examiner alleged that Katsuyama et al. disclose a mixer for mixing an output signal of the high-frequency amplifier with a local oscillation signal, by referencing mixer 5 and voltage controlled oscillator 8 in Fig. 1.

Applicants respectfully submit that Katsuyama et al., do not disclose a **local oscillation signal** that is combined with an amplified high frequency signal applied through the variable filter.

Katsuyama et al. disclose a mixer (5) that combines a local carrier wave, which is **amplified** by a local amplifier (7), and a receiving wave from an interstate variable band pass filter (4). The amplified local carrier wave of Katsuyama et al. mixed with a receiving wave is not analogous to a local oscillation signal mixed with an amplified high frequency

signal in the present invention. There is nothing in the claim recitations of the present invention that discloses the local oscillation signal is **amplified**.

In view of the reasons given above, Applicants respectfully submit that Katsuyama et al. do not disclose claim 1 and the rejection of claim 1 should be withdrawn. Applicants also respectfully submit that the rejection of dependent claims 3 and 6 should be withdrawn for at least the same reasons given above with regard to respective base claim 1.

The Examiner rejected claims 1, 4, 5 and 7 under 35 U.S.C. §103(a) as being unpatentable over Oto.

The Examiner alleged that Oto discloses the recitations of claim 1. However, the Examiner admitted that Oto does not explicitly disclose that the variable filter is located between the amplifier and the mixer; instead the amplifier 25 of Oto is between the variable filter and the mixer. According to the Examiner, as known by a person skilled in the art, switching the position of the variable filter (high pass filter 23 and low pass filter 24) and the amplifier 25 in Oto circuit provides the same signal at the input of the mixer 22.

Applicants respectfully submit that Oto do not disclose or suggest “a high-frequency amplifier for amplifying an input high-frequency signal,” and “said variable filter provided between the high-frequency amplifier and the mixer, having a cut-off frequency that is controllable, wherein the high frequency amplifier shuts off reflected waves outside a pass band of the variable filter,” as recited in claim 1.

Oto discloses an input terminal 21 for receiving VHF, UHF and a satellite television intermediate frequency band television signals. The intermediate frequency band televisions signals are applied to a first mixer through a high-pass filter 23 and low pass filter 24, and a broad-band amplifier 25. The high-pass filter and low pass filter have

variable cut-off frequencies that change every band. The broad-band amplifier amplifies the signal from the high-pass filter and low pass filter and applies the signal to a first mixer 22, which mixes the signal with a first local oscillator signal and converts the band televisions signals to a first intermediate frequency signal.

The broad band amplifier 25 of Oto that amplifies a television signal that is applied through a high-pass filter and a low pass filter is not analogous to a high-frequency amplifier for amplifying an input high-frequency signal in the present invention. The input high frequency signal of the present invention is directly amplified by a high-frequency amplifier and does not pass through a high-pass filter and a low pass filter prior to being amplified. Moreover, the high-pass filter and low pass filter of Oto provided between the input terminal and a broad band amplifier is not analogous to a variable filter provided between the high-frequency amplifier and the mixer, having a cut-off frequency that is controllable.

Applicants respectfully submit that switching the position of the high pass filter 23 and low pass filter 24, and the amplifier 25 in Oto circuit does not provides the same signal at the input of the mixer 22. The variable filter in the present invention receives an amplified high-frequency signal from the high-frequency amplifier. The input television signals received by the high pass filter and low pass filter of Oto are not amplified. Moreover, the high-frequency amplifier of the present invention functions as an isolation amplifier to shut off reflected waves outside the pass band of the variable filter. There is nothing in Oto that discloses an amplifier that shut off reflected waves prior to the television signal passing through the high pass filter and low pass filter.

Applicants also respectfully submit that the Examiner's conclusion in claim 1 is based on improper hindsight reasoning. See M.P.E.P. § 2142. The Examiner may not utilize the Applicants' own disclosure as motivation for altering a reference that lack sufficient disclosure to teach the Applicants' claimed invention.

Accordingly, in view of the reasons given above, Applicants respectfully submit that Oto do not disclose claim 1 and the rejection of claim 1 should be withdrawn. Applicants also submit that the rejection of dependent claim 4 should be withdrawn for at least the same reasons given above with regard to respective base claim 1.

With respect to claim 5, the Examiner alleged that Oto discloses that the variable filter is a variable high-pass filter, by referencing the high-pass filter 23.

Applicants respectfully submit that Oto do not disclose or teach "the variable filter is a variable high-pass filter that selectively permits passage of only high-band components of the input signal," as recited in claim 5.

Oto discloses the high pass filter and low pass filter (also alleged by the Examiner with respect to claim 1), have variable cut-off frequencies that change every band on the band television signals. There is nothing in Oto that discloses a single high pass filter as a variable filter. Together the high pass filter and low pass filter variable cut-off frequencies of Oto change every band of the band television signals and not the high pass filter along.

In view of the reasons given above, Applicants respectfully submit that Oto does not disclose claim 5 and the rejection of claim 5 should be withdrawn.

With respect to dependent claim 7, the Examiner alleged that Oto discloses the cut-off frequency is controllable and is changed for every band, by referencing col. 3, lines 55-57. The Examiner admitted that Oto does not explicitly disclose the method for controlling

is done by a voltage synthesizing method. To cure the deficiencies of Oto, the Examiner takes Official Notice by alleging that using digital control via a microprocessor for the purpose of tuning channels in household TV sets are popular and well-known practice because such method provides accurate tuning.

Applicants respectfully submit that Oto does not disclose or suggest, “the cut-off frequency of the variable filter is controlled by a voltage synthesizing method,” as recited in claim 7.

In the present invention, the voltage synthesizing method is used in place of a phased locked loop to control the cut-off frequency of the variable filter, where at least one of a plurality of predetermined voltages is selected according to a received channel band. The cut-off frequencies of Oto, is controlled by a high pass filter and low pass filter. Therefore, there is nothing in Oto that discloses, “the cut-off frequency of the variable filter is controlled by a voltage synthesizing method,” as claimed.

Applicants respectfully submit that the extent of relying on taking Official Notice in alleging, for example, that using digital control via a microprocessor for the purpose of tuning channels in household TV sets are popular and well-known practice is an assertion by the Examiner, unsupported by documentary evidence. Applicants request that the Examiner either cite a competent prior art reference in substantiation of these conclusions, provide a personal affidavit, or else withdraw the rejection. See M.P.E.P. § 2144.03.

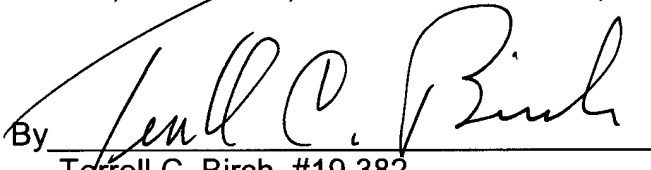
Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration and reexamination of this application and the timely allowance of the pending claims. Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Demetra R. Smith-Stewart (Reg. No. 47,354) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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